

ADDITIONAL NOTES ON THE ERIOCAULACEAE. XXXIV

Harold N. Moldenke

My purpose in publishing these fragmentary and miscellaneous notes from time to time is to place on record in a single series of papers and in a single journal all the information available to me at the time of publication concerning members of this interesting plant family, especially in regard to nomenclature, synonymy, bibliography, misidentifications, and the citation of specimens and illustrations. Since in the limited space available, not all of the information can be repeated here, it has been thought most important to cite as complete a bibliography of the family and of each genus, species, and named subspecific entity as possible, so that future workers interested in a given genus or species may quickly be led to all known sources of information on the subject.

The group has not been thoroughly monographed in its entirety since 1903, and I have no time to attempt it. Instead, it is my purpose to make available to the next monographer as much information as possible and as complete a list of sources where he/she may obtain more information as is possible for me to provide at this time. For this reason, additional bibliographic citations are listed as they are discovered by me or as they are reported to me. Individually the specific paragraphs may seem of hardly any value, but when added to the paragraphs previously published in this series about the given taxon, their value may be better realized.

ERIOCAULACEAE Lindl.

Additional & amended bibliography: L., Gen. Pl., ed. 5, pr. 1, 38 & [509]. 1754; Mart., Nov. Act. Physico-med. Acad. Caes. Leopold.-Carol. Nat. Cur. 17 (1): 1—71, pl. 1—5. 1835; Klotzsch in M. R. Schomb., Reisen Brit.-Guian. [Vers. Fauna & Fl. Brit.-Guian.] 3: 896 & 1063—1064. 1848; Malme, Bih. Svensk. Vet. Akad. Handl. 27 (3), no. 11: 26—33. 1901; Arech., Anal. Mus. Montevide. 4 (1): 19—24, [153], & [154]. 1902; Lutz & Machado, Mem. Inst. Oswaldo Cruz 7: 15, pl. 10. 1915; Malmanche, Contrib. Étud. Anatom. Eriocaul. [thesis] 159. 1919; Saunders, Ann. Bot. 39: 157 & 158, fig. 68 & 69. 1925; H. A. Gleason, Bull. Torr. Bot. Club 58: 328—330. 1931; Perrier de la Bâthie, Cat. Pl. Madag. in Acad. Malg. 22. 1934; J. F. Macbr., Field Mus. Publ. Bot. 13 (363): 489—494, i, & ii. 1936; Perrier de la Bâthie, Biogéogr. Pl. Madag. 47. 1936; Jacques-Félix, Bull. Soc. Bot. France 94: [143]—151 & 461. 1947; Moldenke in Maguire & al., Bull. Torr. Bot. Club 75: 194—203. 1948; Hare, Journ. Linn. Soc. Lond. Bot. 53: 422—448, fig. 6—40, pl. 22. 1950; J. A. Steyerl., Fieldiana Bot. 28: 824—825 & 1188. 1957; H. Hess, Bericht. Schweiz. Bot. Ges. 67: 83—90. 1957; Ohwi, Journ. Jap. Bot. 33: 209—213. 1958; Hisauchi, Excerpt. Bot. A.2: 194. 1960; Stauffer, Excerpt. Bot. A.2: 84. 1960; L., Gen. Pl., ed. 5, pr. 2 [Cramer & Swann, Hist. Nat. Class. 2], 38 &

[509]. 1960; Tomlinson, Journ. Linn. Soc. Lond. Bot. 59: 163—173. 1964; Sharma, Palynolog. Bull. 1: 45—48, fig. 1—7. 1965; Chanda, Gran. Palynolog. 6: 387. 1966; Hansen, Excerpt. Bot. A.12: 520. 1967; Santapau, Excerpt. Bot. A.11: 1967; Kramer, Excerpt. Bot. A. 11: 163. 1967; Hocking, Excerpt. Bot. A.11: 552. 1967; Deb, Gupta, & Malick, Bull. Bot. Soc. Bengal 22: 210. 1968; Sharma, Journ. Palynolog. Spec. Vol. 34 & 49. 1968; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: [146]—192, fig. 30—39. 1969; R. G. West in Walker & West, Stud. Veg. Hist. Brit. Isles 8. 1970; Van Steenis-Kruseman, Fl. Males. Bull. 5, Ind. LV. 1970; Moldenke, Phytologia 20: 243—269. 1970.

The Martius work cited in the bibliography above is often listed as "1833", and, indeed, the manuscript was "Der Akademie mitgetheilt den 6. Juli 1833", but the late Dr. John H. Barnhart, noted botanical biographer and bibliographer, says "I can find no evidence that this paper was published until 1835".

BLASTOCAULON Ruhl.

Additional bibliography: Saunders, Ann. Bot. 39: 157. 1925; Moldenke in Maguire & al., Bull. Torr. Bot. Club 75: 202. 1948; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 158, 184, 186—188, & 191. 1969; Moldenke, Phytologia 20: 244—245. 1970.

BLASTOCAULON ALBIDUM (Gardn.) Ruhl.

Additional synonymy: Blastocaulon albidum Ruhl. apud Prain, Ind. Kew. Suppl. 3: 26. 1908.

Additional bibliography: Moldenke, Phytologia 20: 245. 1970.

BLASTOCAULON PROSTRATUM (Körn.) Ruhl.

Additional synonymy: Blastocaulon prostratum Ruhl. apud Prain, Ind. Kew. Suppl. 3: 26. 1908.

Additional bibliography: Moldenke, Phytologia 20: 245. 1970.

BLASTOCAULON RUPESTRE (Gardn.) Ruhl.

Additional synonymy: Blastocaulon rupestre Ruhl. apud Prain, Ind. Kew. Suppl. 3: 26. 1908.

Additional bibliography: Saunders, Ann. Bot. 39: 157. 1925; Moldenke in Maguire & al., Bull. Torr. Bot. Club 75: 202. 1948; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 184, 186—188, & 191. 1969; Moldenke, Phytologia 20: 245. 1970.

The Mello Barreto 10129 [Herb. Jard. Bot. Rio Jan. 24419], distributed and previously cited by me as Blastocaulon rupestre, is actually Paepalanthus bryoides (Riedel) Kunth. Schwacke 8486 appears to be a mixture with Paepalanthus bryoides.

Emended citations: BRAZIL: Minas Gerais: Schwacke 8486 [Herb. Jard. Bot. Belo Horiz. 26666; Herb. Magalhães Gomes 2962] (B, N).

CARPOTEPALA Moldenke

Additional bibliography: Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 175, 178, 179, 184—187, & 191, fig. 37 A & B. 1969; Mol-

denke, *Phytologia* 20: 245—246, 296, & 297. 1970.

CARPTOTEPALA JENMANI (Gleason) Moldenke

Additional synonymy: Carptotepala jermanii (Gleason) Moldenke ex Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 191. 1969.

Additional bibliography: Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 175, 178, 179, 184—187, & 191, fig. 37 A & B. 1969; Moldenke, *Phytologia* 20: 246, 296, & 297. 1970.

Illustrations: Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 178, fig. 37 A & B. 1969.

ERIOCAULON Gron.

Additional synonymy: Eriocavlon Raesch., *Nom. Bot.* 30. 1797.

Additional & amended bibliography: L., *Gen. Pl.*, ed. 5, pr. 1, 38 & [509]. 1754; Mart., *Nov. Act. Physico-med. Acad. Caes. Leopold.-Carol. Nat. Cur.* 17 (1): [3], 4, 6, 7—13, 15, 16, 22, 24, 27, 29, 31, 33, 38, 40, 41, 51, 55, 57, 58, & 63, pl. 1, fig. 2, pl. 2, fig. 2, & pl. 5. 1835; Klotzsch in M. R. Schomb., *Reisen Brit.-Guian.* [Vers. Fauna & Fl. Brit.-Guian.] 3: 896 & 1063—1064. 1848; Malme, *Bih. Svensk. Vet. Akad. Handl.* 27 (3), no. 11: 32—33. 1901; Arech., *Anal. Mus. Montev.* 4 (1): 20—23 & [153]. 1902; Beauverd, *Bull. Herb. Boiss.*, sér. 2, 8: 284—287, 293—295, & 299, fig. A & B. 1908; Saunders, *Ann. Bot.* 39: 157. 1925; J. F. Macbr., *Field Mus. Publ. Bot.* 13 (363): 489—493 & 1. 1936; Jacques-Félix, *Bull. Soc. Bot. France* 94: [143] & 144. 1947; Moldenke in Maguire & al., *Bull. Torr. Bot. Club* 75: 194—196. 1948; Hare, *Journ. Linn. Soc. Lond. Bot.* 53: 422—448, fig. 6—40, pl. 22. 1950; H. Hess, *Bericht. Schweiz. Bot. Ges.* 67: 83—90. 1957; Ohwi, *Journ. Jap. Bot.* 33: 209—213. 1958; Hisauchi, *Excerpt. Bot.* A.2: 194. 1960; Stauffer, *Excerpt. Bot.* A.2: 84. 1960; L., *Gen. Pl.*, ed. 5, pr. 2 [Cramer & Swann, *Hist. Nat. Class.* 3], 38. 1960; Tomlinson, *Journ. Linn. Soc. Lond. Bot.* 59: 169 & 173. 1964; Sharma, *Palynolog. Bull.* 1: 45—48, fig. 1—7. 1965; Hansen, *Excerpt. Bot.* A.12: 520. 1967; Kramer, *Excerpt. Bot.* A.11: 163. 1967; Santapau, *Excerpt. Bot.* A.11: 176. 1967; Hocking, *Excerpt. Bot.* A.11: 552 (1967) and A.13: 506 & 510. 1968; Deb, Gupta, & Mallick, *Bull. Bot. Soc. Bengal* 22: 210. 1968; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: [146]—149, 154—163, 166—177, & 180—192, fig. 32 A—K, 33 J & L, 35 A—E & J—L, 36 A—D & K—N, 38 A—D & G—K, & 39 E—J. 1969; R. G. West in Walker & West, *Stud. Veg. Hist. Brit. Isles* 9. 1970; Van Steenis-Kruseman, *Fl. Males. Bull.* 5, Ind. LV. 1970; Moldenke, *Phytologia* 20: 246—248, 250, 253—257, 259, 263—265, 267, 268, 277, 278, 280, 281, 287, 294, 295, 297, 302, 303, & 307. 1970.

Raeschel (1797) records the German vernacular name "Elkenhalm" for members of this genus. The Martius work cited in the bibliography above is often listed as published in "1833", and, indeed, the manuscript was submitted for publication on July 6, 1833, but the noted botanical bibliographer, John H. Barnhart, says "I can find no evidence that this paper was published until 1835".

ERIOCAULON ACANTHOCEPHALUM Griff.

Additional bibliography: Moldenke, *Phytologia* 18: 76. 1969; Moldenke, *Biol. Abstr.* 50: 6336. 1969.

ERIOCAULON ACHITON Körn.

Additional bibliography: Hansen, *Excerpt. Bot. A.* 12: 520. 1967; Moldenke, *Phytologia* 20: 6. 1970.

ERIOCAULON ADAMESII Meikle

Additional & emended bibliography: Moldenke, *Phytologia* 3: 143 & 181 (1949) and 17: 477. 1969.

ERIOCAULON AFZELIANUM Wikstr.

Additional & emended bibliography: Körn., *Linnaea* 27: 582, 586, & 680—682. 1856; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 161, 171, & 189. 1969; Moldenke, *Phytologia* 19: 323. 1970.

ERIOCAULON ALPESTRE Hook. f. & Thoms.

Additional & emended bibliography: Moldenke, *Phytologia* 2: 376 & 377 (1947), 2: 493 (1948), and 3: 144 & 181. 1949; K. U. Kramer, *Excerpt. Bot. A.* 6: 33. 1963; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 171, 172, 184, 187, 189, & 191. 1969; Moldenke, *Phytologia* 19: 323, 341, 412, & 482. 1970.

ERIOCAULON ALPESTRE var. **AMPULLARIUM** Van Royen

Synonymy: *Eriocaulon alpestre* var. *ampullarium* Kramer, *Excerpt. Bot. A.* 6: 33, *sphalm.* 1963.

Additional bibliography: K. U. Kramer, *Excerpt. Bot. A.* 6: 33. 1963; Moldenke, *Phytologia* 19: 14. 1969.

ERIOCAULON ALPINUM Van Royen

Additional bibliography: K. U. Kramer, *Excerpt. Bot. A.* 6: 33. 1963; Moldenke, *Phytologia* 19: 323 & 481. 1970; G. Taylor, *Ind. Kew. Suppl.* 14: 54. 1970.

ERIOCAULON AMBOENSE Schinz

Additional bibliography: Moldenke, *Phytologia* 19: 65—66 (1969) and 19: 246. 1970.

ERIOCAULON ANDONGENSE Welw.

Additional bibliography: Moldenke, *Phytologia* 19: 15 (1969) and 19: 469. 1970.

ERIOCAULON ANGUSTIFOLIUM Körn.

Additional & emended bibliography: Körn., *Linnaea* 27: 600. 1856; Körn. in Mart., *Fl. Bras.* 3 (1): 494—496 & 507. 1863; Moldenke, *Phytologia* 19: 323 & 481. 1970.

ERIOCAULON ANGUSTISEPALUM H. Hess

Additional bibliography: H. Hess, *Bericht. Schweiz. Bot. Ges.* 67: 83 & 89. 1957; Moldenke, *Phytologia* 19: 15. 1969.

ERIOCAULON ANNAMENSE H. Lecomte

Additional bibliography: Moldenke, *Phytologia* 2: 377. 1947; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 161 & 189. 1969; Moldenke, *Phytologia* 19: 323. 1970.

ERIOCAULON ANNUUM Milne-Redhead

Additional & emended bibliography: Moldenke, *Phytologia* 3: 143 & 181--182 (1949), 19: 16 (1969), and 19: 476. 1970.

ERIOCAULON ANTUNESII Engl. & Ruhl.

Additional bibliography: Moldenke, *Phytologia* 19: 324, 345, 446, & 468. 1970.

ERIOCAULON AQUATILE Körn.

Additional & emended bibliography: Körn., *Linnaea* 27: 600. 1856; Körn. in Mart., *Fl. Bras.* 3 (1): 495--496 & 507. 1863; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 401. 1894; Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 42, 49, 57, 284, & 289. 1903; Prain, *Ind. Kew. Suppl.* 3: 126. 1908; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 2, 2: 401 (1946) and pr. 3, 2: 401. 1960; Moldenke, *Phytologia* 19: 16. 1969.

ERIOCAULON ARECHAVALETAE Herter

Additional & emended bibliography: Arech., *Anal. Mus. Montev.* 4 (1): 21--23 & [153]. 1902; Moldenke, *Phytologia* 2: 375 & 377. 1947; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 180, 181, 186, 187, & 191, fig. 38 G. 1969; Moldenke, *Phytologia* 19: 324 (1970) and 20: 25. 1970.

Additional illustrations: Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 180, fig. 38 G. 1969.

ERIOCAULON ARENICOLA Britton & Small

Additional & emended bibliography: Moldenke, *Phytologia* 1: 311, 350, & 352 (1939) and 19: 324. 1970.

ERIOCAULON ARFAKENSE Van Royen

Additional bibliography: K. U. Kramer, *Excerpt. Bot. A.6*: 33. 1963; Moldenke, *Phytologia* 19: 66. 1969; G. Taylor, *Ind. Kew. Suppl.* 14: 54. 1970.

ERIOCAULON ARISTATUM H. Hess

Additional & emended bibliography: H. Hess, *Bericht. Schweiz. Bot. Ges.* 67: 83--84 & 89. 1957; Moldenke, *Phytologia* 19: 324 & 489. 1970.

ERIOCAULON ATABAPENSE Moldenke

Additional bibliography: Moldenke, *Phytologia* 19: 324, 456, & 485. 1970.

ERIOCAULON ATRATUM var. **MAJOR** Thwaites

Additional bibliography: Moldenke, *Phytologia* 2: 379 (1947) and 19: 324. 1970.

ERIOCAULON AUSTRALE R. Br.

Synonymy: Eriocaulon austeral Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 169, sphalm. 1969.

Additional bibliography: Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 156, 159--163, 168, 169, 171, 172, 175, 180--187, & 189--191, fig. 33 J, 35 L, 38 D, & 39 E--H. 1969; Moldenke, Phytologia 20: 6 & 23. 1970.

Additional illustrations: Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 156, 168, 180, & 182, fig. 33 J, 35 L, 38 D, & 39 E--H. 1969.

ERIOCAULON BARBA-CAPRAE Fyson

Additional bibliography: Moldenke, Phytologia 2: 377 (1947) and 17: 482. 1969.

ERIOCAULON BAURI N. E. Br.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Cap. 7: 53--55 & 776. 1897; Moldenke, Phytologia 19: 326. 1970.

ERIOCAULON BEAUVERDI Moldenke

Additional & emended bibliography: Beauverd, Bull. Herb. Boiss., sér. 2, 8: 283--285, fig. 9 A 1--14 (1908) and 8: 987--988, fig. 1 H & J. 1909; Moldenke, Phytologia 2: 373, 374, & 377 (1947), 19: 326 (1970), and 20: 281. 1970.

Emended illustrations: Beauverd, Bull. Herb. Boiss., sér. 2, 8: 285, fig 9 A 1--14 (1908) and 8: 987, fig. 1 H & J. 1909.

ERIOCAULON BENTHAMII Kunth

Additional synonymy: Eriocaulon benthami Hook. ex Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 191. 1969.

Additional bibliography: Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 171, 172, 184, 186, 189, & 191. 1969; Moldenke, Phytologia 20: 6. 1970.

ERIOCAULON BIFISTULOSUM Van Heurck & Muell.-Arg.

Additional bibliography: H. Hess, Bericht. Schweiz. Bot. Ges. 67: 87--89. 1957; Stauffer, Excerpt. Bot. A.2: 84. 1960; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 166, 167, 171, & 189. 1969; Moldenke, Phytologia 20: 6--7. 1970.

ERIOCAULON BONI H. Lecomte

Additional bibliography: Moldenke, Phytologia 2: 377 (1947) and 19: 20. 1969.

ERIOCAULON BRACHYPEPLON Körn.

Additional & emended bibliography: Körn., Linnaea 27: 586 & 665--667. 1856; Moldenke, Phytologia 2: 376 (1947) and 19: 326. 1970.

ERIOCAULON BREVIPEDUNCULATUM Merr.

Additional bibliography: Hocking, Excerpt. Bot. A.7: 455. 1964; Moldenke, Phytologia 20: 7 & 13. 1970.

ERIOCAULON BROMELIOIDEUM H. Lecomte

Additional bibliography: Moldenke, Phytologia 2: 377 (1947) and 19: 21. 1969; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 171, 172, & 189. 1969.

ERIOCAULON BROWNIANUM Mart.

Additional bibliography: Mart., Nov. Act. Physico-med. Acad. Caes. Leopold.-Carol. Nat. Cur. 17 (1): 29 & 41. 1835; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 171, 172, 185, 186, & 189. 1969; Moldenke, Phytologia 20: 7. 1970.

The Martius reference cited above is often listed as "1833" in bibliographies, which was the date of its submission and acceptance as a manuscript, but according to the late Dr. John H. Barnhart, it was apparently not published until 1835.

ERIOCAULON BRUNONIS Britten

Additional bibliography: Moldenke, Phytologia 20: 7 & 23. 1970.

ERIOCAULON BUCHANANII Ruhl.

Additional synonymy: Eriocaulon buchananii Schlecht. ex Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 189. 1969.

Additional & emended bibliography: Moldenke, Phytologia 3: 143 & 184. 1949; H. Hess, Bericht. Schweiz. Bot. Ges. 67: 84 & 90. 1957; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 171 & 189. 1969; Moldenke, Phytologia 19: 327 & 470. 1970.

ERIOCAULON BUERGERIANUM Körn.

Additional & emended bibliography: Moldenke, Phytologia 2: 375 & 376 (1947) and 3: 143, 144, & 184. 1949; Koyama in Ohwi, Fl. Jap. 266 & 268. 1965; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 161, 171, 172, 185, 186, & 189. 1969; Moldenke, Phytologia 19: 327 & 417. 1970.

Koyama (1965) records the vernacular name "ō-hoshi-kusa" and says that the plant in Japan grows in rice paddy fields.

ERIOCAULON BURCHELLII Ruhl.

Additional bibliography: Moldenke, Alph. List Cit. 1: 12 (1946) and 4: 1072. 1949; Moldenke, Phytologia 17: 486. 1969.

ERIOCAULON CAAGUAZUENSE Ruhl.

Additional & emended synonymy: Eriocaulon caaguazuensis Ruhl. in Urb., Engl. Bot. Jahrb. 37: 519. 1906. Eriocaulon caaguazensis Ruhl. ex Moldenke, Bull. Jard. Bot. Brux. 27: 134, in syn. sphalm. 1957.

Additional bibliography: Anon., U. S. Dept. Agr. Bot. Subj. Index 5: 4227. 1958; Moldenke, Phytologia 17: 486. 1969.

ERIOCAULON CABRALENSE Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 2: 378 (1947) and 18: 171. 1969.

ERIOCAULON CAESIUM Griseb.

Additional bibliography: Moldenke in Maguire & al., *Bull. Torr. Bot. Club* 75: 196. 1948; Moldenke, *Alph. List Cit.* 2: 460 (1948) and 4: 1188 & 1229. 1949; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 184, 186, & 191. 1969; Moldenke, *Phytologia* 18: 172. 1969.

This species resembles in its general habit Paepalanthus brunneus Moldenke of Venezuela and Guyana.

ERIOCAULON CAPITULATUM Moldenke

Additional bibliography: Moldenke, *Phytologia* 2: 378. 1947; Moldenke, *Alph. List Cit.* 2: 370 (1948) and 4: 1255. 1949; Moldenke, *Phytologia* 19: 23. 1969.

ERIOCAULON CARSONI F. Muell.

Additional bibliography: Moldenke, *Phytologia* 2: 376 (1947) and 19: 328 & 452. 1970.

ERIOCAULON CAULIFERUM Mak.

Additional bibliography: Moldenke, *Phytologia* 2: 378 (1947) and 3: 144. 1949; Koyama in Ohwi, *Fl. Jap.* 266 & 267. 1965; Moldenke, *Phytologia* 19: 23. 1969.

Koyama (1965) describes this as a very rare plant, found only in Tataro-muma, Kozuke Province, on Honshu island, Japan, the vernacular name for it there being "takano-hoshi-kusa".

ERIOCAULON CELEBICUM Van Royen

Additional bibliography: K. U. Kramer, *Excerpt. Bot. A.* 6: 33. 1963; Moldenke, *Phytologia* 17: 453 (1968) and 19: 21 & 23. 1969.

ERIOCAULON CEYLANICUM Körn.

Additional & emended bibliography: Körn., *Linnaea* 27: 586 & 667--669. 1856; Moldenke, *Phytologia* 2: 377 & 379 (1947) and 19: 328 & 451. 1970.

ERIOCAULON CHINOROSSICUM Komarov

Additional bibliography: Moldenke, *Phytologia* 2: 375 & 378 (1947) and 19: 24. 1969.

ERIOCAULON CHRISTOPHERI Fyson

Additional bibliography: Moldenke, *Phytologia* 2: 378 (1947) and 19: 11 & 24. 1969.

ERIOCAULON CINEREUM R. Br.

Additional synonymy: Eriocaulon cinereum var. sieboldianum (Sieb. & Zucc.) Koyama in Ohwi, *Fl. Jap.* 266. 1965. Eriocaulon sexangulare sensu auct. Japon. ex Koyama in Ohwi, *Fl. Jap.* 266, in syn. 1965.

Additional bibliography: Hare, Journ. Linn. Soc. Lond. Bot. 53: 443. 1950; Koyama in Ohwi, Fl. Jap. 265—267. 1965; Deb, Gupta, & Malick, Bull. Soc. Bot. Bengal 22: 210. 1968; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 184, 186, & 191. 1969; Moldenke, Phytologia 20: 7—8, 11, 23, & 31. 1970.

Koyama (1965) lists the vernacular name "hoshi-kusa" for this plant and records it from "wet lowlands; Honshu, Shikoku, Kyushu, Korea, Ryukyus, Formosa, China, Philippines, Malaysia, Indochina, India, and Africa. The typical phase is Australian". Deb and his associates (1968) describe E. cinereum as a "small tufted herb", flowering in December, and cite Sengupta 1114 from Bhutan.

ERIOCAULON CIPOENSE Alv. Silv.

Additional bibliography: Moldenke, Phytologia 2: 373 & 378 (1947) and 19: 26. 1969.

ERIOCAULON COERULEUM Van Royen

Additional bibliography: K. U. Kramer, Excerpt. Bot. A.6: 33. 1963; Moldenke, Phytologia 19: 26. 1969.

ERIOCAULON COLLETTII Hook. f.

Additional bibliography: Moldenke, Phytologia 19: 26—27 & 100. 1969.

ERIOCAULON COLLINUM Hook. f.

Additional bibliography: Santapau, Excerpt. Bot. A.11: 176. 1967; Moldenke, Phytologia 19: 329 & 420. 1970.

ERIOCAULON COMPRESSUM Lam.

Additional bibliography: Muenscher, Aquat. Pl. U. S. 192—194 & 367, fig. 84 K & L, map 205. 1944; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 149, 159, 161, 162, 170, 172, 176, 177, 180—183, 185, 186, & 190, fig. 36 M, 38 J, & 39 I & J. 1969; Moldenke, Phytologia 20: 8, 9, 39, 41, & 52. 1970.

Additional illustrations: Muenscher, Aquat. Pl. U. S. 193, fig. 84 K & L. 1944; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 176, 180, & 182, fig. 36 M, 38 J, & 39 I & J. 1969.

ERIOCAULON COMPRESSUM var. HARPERI Moldenke

Additional & emended bibliography: Moldenke, Phytologia 1: 313, 349—352, 356, 358, 359, & 362 (1939) and 19: 330. 1970.

ERIOCAULON COMPTONII Rendle

Additional bibliography: Moldenke, Phytologia 2: 378 (1947) and 19: 28 & 93. 1969.

ERIOCAULON CONGOLENSE Moldenke

Additional bibliography: Moldenke, Phytologia 17: 493. 1969; G. Taylor, Ind. Kew. Suppl. 14: 54. 1970.

ERIOCAULON CONICUM (Fyson) C. E. C. Fischer

Additional bibliography: Moldenke, Phytologia 2: 378 (1947) and

19: 29. 1969.

ERIOCAULON CRASSISCAPUM Bong.

Additional bibliography: Malme, Bih. Svensk. Vet. Akad. Handl. 27 (3), no. 11: 32. 1901; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 161, 162, 171, 172, 186, ' 189--191. 1969; Moldenke, Phytologia 20: 8--9, 94, & 105. 1970.

ERIOCAULON CRISTATUM Mart.

Additional bibliography: Santapau, Excerpt. Bot. A.11: 176. 1967; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 171--173, 186, 189, & 191. 1969; Moldenke, Phytologia 20: 9. 1970.

ERIOCAULON CRISTATUM var. BREVICALYX C. H. Wright

Additional bibliography: Moldenke, Phytologia 19: 30 (1969) and 19: 330. 1970.

ERIOCAULON CRISTATUM var. MACKII Hook. f.

Synonymy: Eriocaulon cristatum var. mackii Hook. ex Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 191. 1969.

Additional bibliography: Moldenke, Phytologia 18: 83. 1969; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 191. 1969.

ERIOCAULON CUBENSE Ruhl.

Additional bibliography: Moldenke, Phytologia 1: 350 & 355 (1939) and 19: 331. 1970

ERIOCAULON CUSPIDATUM Dalz.

Additional bibliography: Körn., Linnaea 27: 581, 583, 586, & 684--685. 1856; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 189. 1969; Moldenke, Phytologia 19: 331 (1970) and 20: 31. 1970.

ERIOCAULON DALZELLII Körn.

Additional & emended bibliography: Körn., Linnaea 27: 578, 584, 586, & 605--606. 1856; Moldenke, Phytologia 2: 375 & 376 (1947) and 19: 331. 1970.

ERIOCAULON DECANGULARE L.

Additional synonymy: Eriocavlon decangulare Raeusch, Nom. Bot. 30. 1797. Eriocavlon serotinum Raeusch., Nom. Bot. 30. 1797.

Additional bibliography: J. F. Gmel. in L., Syst. Nat., ed. 13, 2: 206. 1791; Holm, Bot. Gaz. 31: 17--37. 1904; Muenscher, Aquat. Pl. U. S. 192--194 & 367, fig. 84 A--D, map 204. 1944; Hare, Journ. Linn. Soc. Lond. Bot. 53: 423, 436, 438, & 443. 1950; Santapau, Excerpt. Bot. A.11: 176. 1967; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: [146], 149, 154, 155, 159, 161--163, 168--170, 172, 173, 175--177, 180, 181, 185, 186, 189, 190, & 192, fig. 32 A--F, 35 A--E, 36 B--D & N, & 38 H & I. 1969; Moldenke, Phytologia 20: 8--10, 12, 22, 39, & 41. 1970.

Additional illustrations: Muenscher, Aquat. Pl. U. S. 193, fig. 84 A--D. 1944; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 154,

168, 176, & 180, fig. 32 A—F, 35 A—E, 36 B—D & N, & 38 H & I. 1969.

The Correll & Wasshausen 27567 and Cory 50789, distributed and the former previously cited as typical E. decangulare, now appear to me to be f. parviceps Moldenke

Additional citations: NEW JERSEY: Burlington Co.: Stuckey 2696 (Ml).

PAEPALANTHUS ALBO-VAGINATUS Alv. Silv.

Additional bibliography: Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: [146], 170, 178, 179, 186—188, & 191, fig. 37 C—E. 1969; Moldenke, Phytologia 20: 305—306. 1970.

Additional illustrations: Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 178, fig. 37 C—E. 1969.

PAEPALANTHUS ALPINUS Körn.

Additional & emended bibliography: Körn. in Mart., Fl. Bras. 3 (1): 409—410 & 508. 1863; Moldenke, Phytologia 20: 307—308. 1970.

PAEPALANTHUS ALSINOIDES C. Wright

Additional bibliography: Tomlinson, Journ. Linn. Soc. Lond. Bot. 59: 169—172, fig. 18—28. 1964; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: [146], 148, 149, 152, 153, 159—163, 166, 167, 173, 174, 187, & 191, fig. 31 A—K. 1969; Moldenke, Phytologia 20: 308. 1970.

Additional citations: CUBA: Oriente: León & Marie-Victorin 18697 (Vi). Pinar del Río: Ekman 11143 (S), 16781 (S), 17284 (S), 17918 (Er, S); León 19403 (Vi, Vi); Marie-Victorin 58375 (Vi); Marie-Victorin & Alain 371 (Vi); Moldenke & Moldenke 19881 (B, B1, Bm, Bs, Ca, Fg, Fy, Gg, Hk, Hw, Le, Lm, Lw, Ml, Mm, Ok, Rf, Rs, Sm, Ss, Ss, Ut, Z); C. Wright "P", in part (S).

PAEPALANTHUS ALSINOIDES var. MINIMUS Jennings

Bibliography: O. E. Jennings, Ann. Carnegie Mus. 11: 89, pl. 17, fig. E—H. 1917; Moldenke, N. Am. Fl. 19: 40. 1937; Moldenke, Phytologia 1: 332, 351, 352, 355, 357, 361, & 363. 1939; Alain, Contrib. Ocas. Mus. Hist. Nat. Coleg. La Salle 7: 47 & 114. 1946; Moldenke, Known Geogr. Distrib. Erioc. 5 & 44. 1946; Moldenke, Alph. List Cit. 1: 92 & 186 (1946), 2: 583, 649, & 651 (1948), 3: 929 (1949), and 4: 1144. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 44, 45, & 208. 1949; Moldenke, Phytologia 3: 502 (1951) and 4: 134. 1952; Moldenke, Résumé 52, 54, & 485. 1959; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 191. 1969; Moldenke, Phytologia 20: 308. 1970.

Illustrations: O. E. Jennings, Ann. Carnegie Mus. 11: pl. 17, fig. E—H. 1917.

The type of this variety was collected by Otto Emery Jennings (no. 387) on gravelly soil in the pinebarrens one mile north of Los Indios, Isla de Pinos, Cuba, on May 19, 1910. The distinguished author of the name notes (1917) that "This plant is evi-

dently to be regarded as a derivative of the Cuban Paepalanthus alsinoides. It was found growing on the coarse, glistening, white quartzose gravel in the pine-barrens north of Los Indios, and it was associated with a number of plants with decided inclinations toward a habitat of acid soil: Pinguicula filifolia, Kalmia sp., Xyris ambigua". He continues: "The variety differs from the typical species in that it has leaves only half as long as the latter, the peduncles only about one-third as long, and the hairs of the flowers scarcely or not at all granulose on the inside surface of the cell-wall. In most of the other characters the variety agrees well with the species. The flowers were too far past maturity to be studied satisfactorily, but were seen to be about 1.8 mm. long, the three outer segments 1 mm. long, obcuneate, the truncate apex piliferous and erose, the inner segments as long, united into a slender tube with the small lobes and, after maturity, strongly infolded."

Recent collectors have found this plant growing in sandy pine-lands, pure white sand, white siliceous sand, and "the very whitest sand beneath pines", flowering and fruiting in February, April, June, October, and November.

The paper by Alain (1946), cited in the bibliography above, is sometimes listed at "1947", but Brother Alain assures me personally that the work was issued in the year 1946.

Material of this variety has been misidentified and distributed in herbaria under the names P. alsinoides C. Wright, P. retusus C. Wright, and Dupatya alsinoides (W. & Sauv.) Shafer.

Additional citations: CUBA: Pinar del Río: Ekman 11034 (S), 11254 (Ca—491272, S); Shafer 10682 (Ut—27703); C. Wright "P", in part (S). ISLA DE PINOS: Alain & Killip 2209 (W—1959545); Britton, Britton, & Wilson 14144 (S); Ekman 11965 (S), 12100 (S); Killip 42857 (Le), 42879 (Le, N), 44752 (N, Z), 45147 (B), 45388 (B); León & Marie-Victorin 18852 (W—1784924); Marie-Victorin & Alain 168 (Vi).

PAEPALANTHUS AMOENUS (Bong.) Körn.

Synonymy: Eriocaulon amoenum Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 1: 316, [pl. 56]. 1831. Eriocaulon (Paepalanthus) longipes Mart., Flora 24, Beibl. 2: 35. 1841. Eriocaulon longipes Mart. ex Steud., Syn. Fl. Glum. 2: [Cyp.] 276 & 334. 1855. Paepalanthus amoenus Körn. in Mart., Fl. Bras. 3 (1): 282, 291, & 292. 1863. Dupatya amoena (Bong.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya amoena Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902. Paepalanthus longipes Mart. ex Moldenke, Résumé Suppl. 1: 21, in syn. 1959. Paepalanthus armoerus (Bong.) Körn. ex Renné, Levant. Herb. Inst. Agron. 69, sphalm. 1960.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 1: 637, [pl. 56]. 1831; Bong., Ess. Monog. Erioc. 37. 1831; Steud.,

Nom. Bot., ed. 2, 1: 585. 1840; Mart., Flora 24, Beibl. 2: 35. 1841; Kunth, Enum. Pl. 3: 578, 580, & 612. 1841; D. Dietr., Syn. Pl. 5: 268. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 276, 283, 333, & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 282, 291, 292, 316—318, 499, & 506, pl. 42. 1863; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 24. 1888; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 877 & 878 (1893) and 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 3, 5, 12, 26, 184, 188—189, [283], 284, 286, & 289. 1903; Lutz & Machado, Mem. Inst. Oswaldo Cruz 7: 15, pl. 10. 1915; Alv. Silv., Fl. Mont. 1: 192 & 401. 1928; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 42 & 52. 1930; Stapf, Ind. Lond. 4: 518. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 877 & 878 (1946) and 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 10, 28, 32, 36, & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Alph. List Cit. 4: 1203. 1949; Moldenke, Phytologia 4: 134. 1952; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 95, 279, 285, 289, 323, & 485. 1959; Moldenke, Résumé Suppl. 1: 21. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 877 & 878 (1960) and 2: 401. 1960; Rennó, Levant. Herb. Inst. Agron. 69. 1960; Moldenke, Résumé Suppl. 3: 34 (1962) and 11: 4. 1964; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 160, 161, 163, 166, 174, 184, 186, & 189—191. 1969.

Illustrations: Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 1: [pl. 56]. 1831; Körn. in Mart., Fl. Bras. 3 (1): pl. 42. 1863; Lutz & Machado, Mem. Inst. Oswaldo Cruz 7: pl. 10. 1915.

The type of this species was collected by Ludwig Riedel "an kiesigen, grasigen Bergstellen" near Capanema, Minas Gerais, Brazil, and is deposited in the Leningrad herbarium. Eriocaulon longipes Mart. is apparently based on Martius 878, also from Minas Gerais, deposited in the Meisner herbarium.

Bongard's original description of this taxon is (1831) as follows: "Caulescens; caule erecto simplici folioso; foliis amplexicaulibus lato-lanceolatis acuminatis adpressis glabris; pedunculis fasciculatis glabris; vaginis caulescentibus bifidis. Tab. LVI. Habitat in glareosis graminosis prope Capanema. Floret Februario. 4."

Ruhland (1903) cites from Goiás Glaziou 22312, and from Minas Gerais P. Clausen 22 & 1156, Glaziou 15517, Martius 878, L. Riedel 1476, Schwacke 7227, 9301, 12169, & 12193, and Sellow B.1299 C.279. Silveira (1928) cites A. Silveira 264 from the Serra do Ouro Branco, Minas Gerais, collected in 1905.

The plate 56, originally prepared for Bongard's work (1831), was apparently never published, at least according to Kunth (1841), and probably exists only in the Leningrad library and/or herbarium.

Recent collectors describe this plant as an erect herb, 0.8—2.5 meters tall, the flower-heads and flowers white, growing on open rocky slopes and in wet places on campos, at altitudes of

1000 to 1300 meters, flowering in every month of the year. Mrs. Chase describes it as "characteristic of upper altitudes". Material has been misidentified and distributed in herbaria under the names P. bongardianus Mart., P. speciosus (Bong.) Körn., and P. variabilis Alv. Silv.

Additional citations: BRAZIL: Federal District Brasília: Heringer 7887/81 (Z), 10431 (N); Philcox & Onishi 4892 (N). Goiás: Glaziou 22312 (B, Br); Heringer 7887 [Herb. Brad. 23117] (Lw); Maguire, Maguire, & Murça Pires 44790 (N). Minas Gerais: Andrade 1120 [Emmerich 1081] (Bd—16657); Black & Magalhães 51-11883 (Z); Black, Magalhães, & Graflinger 51-12220 (Z); M. A. Chase 9221 (W—1282186); P. Clausen 3 (P), 11 (Br, Br), 22 (B, B), 156 (B), 267 (Br), s.n. [1840] (S), s.n. (Br, N); Glaziou 15517 (B, Br), s.n. [14 juin 1884] (N); Irwin, Maxwell, & Wasshausen 20239 (N, Rf); A. Lutz s.n. [Herb. Lutz 1] (Ja); Martius 878 [39] (B, Br, Er, M, S); Mello Barreto 2521 [Herb. Jard. Bot. Belo Horiz. 7873; Herb. U. S. Nar. Arb. 236374] (W—2109988), 2522 [Herb. Jard. Bot. Belo Horiz. 4079; Herb. U. S. Nat. Arb. 236399] (N, W—2109989); Mendes Magalhães 1216 [Herb. Jard. Bot. Belo Horiz. 39602] (N); Murça Pires & Black 2830 (Z), 3303 (Z), 3359 (Z); L. Riedel s.n. [Caxoeira do Campo, 1834] (Br, Br); Schwacke 9301 (B); Segadas-Vianna 6009 (Ja); Sellow B.1299 C.279 (B); Williams & Assis 6699 (N, S, Vi, W—1932778), 7161 (Ca—744429, W—1932924), 7265 (W—1932953). State undetermined: Dupré s.n. [Brasil merid. 1842] (N); Sellow s.n. [Brasília] (B). MOUNTED ILLUSTRATIONS: Mart. Fl. Bras. 3 (1): pl. 42 (B); drawings & notes by Körnicke (B).

PAEPALANTHUS AMOENUS var. CURRALENSIS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 401. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

The type of this variety was collected by Álvaro Adolpho da Silveira (no. 348) in the Serra do Curral, Minas Gerais, Brazil, in 1905, and is deposited in the Silveira herbarium. Thus far the variety is known to science only from the original collection.

PAEPALANTHUS ANDICOLA Körn.

Synonymy: Dupatya andicola (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya andicola Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 408, 502, & 508. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 201, 207, [283], & 289. 1903; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Moldenke, Known Geogr. Distrib. Erioc. 6, 28, & 44. 1946; Moldenke, Phytologia 2: 373. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 60, 63, 70, & 208. 1949;

Moldenke, Alph. List Cit. 3: 974. 1949; Moldenke, Phytologia 4: 134. 1952; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 67, 71, 80, 279, & 485. 1959; Moldenke, Résumé Suppl. 5: 5 (1962) and 18: 4. 1969; Moldenke, Phytologia 20: 308. 1970.

Ruhland (1903) cites only the type collection of this species, Funck & Schlim 811, from Trujillo, Venezuela, of which Macbride photographed an isotype in the herbarium of the Conservatoire et Jardin Botaniques at Geneva as his type photograph number 25162. The species has been found growing at altitudes of 2500 to 3600 meters, flowering and fruiting in February, July, August, October, and November. Core found it growing in tufts in wet soil, the flowers gray, while Fosberg describes it as growing in small groups of rosettes, the underground stems branching, the peduncles flat, inhabiting páramo slopes with white sand, oozing water here and there, brushy hillsides, and rocky ridges and ledges. Material has been misidentified and distributed in herbaria as P. alpium Körn. and P. ensifolius (H.B.K.) Kunth.

Additional citations: COLOMBIA: Cauca: E. L. Core 997 (N). Cundinamarca: Cuatrecasas, Idrobo, Jaramillo, & Mora 25624 (Fg); Killip & Ariste-Joseph 11939 (W-1140022); R. E. Schultes 18792 (W-2172259, Z). Méta: García Barriga 18034 (N, N). Norte de Santander: F. R. Fosberg 19174 (N). VENEZUELA: Trujillo: Funck & Schlim 811 [Macbride photos 25162] (N--photo of isotype, N--photo of isotype, W--photo of isotype); Jahn 19 (W-602213). ECUADOR: Loja: J. A. Steyermark 54409 (S).

PAEPALANTHUS ANDICOLA var. VILLOSUS Moldenke

Bibliography: Moldenke, Phytologia 2: 416. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 60 & 208. 1949; Moldenke, Phytologia 4: 134. 1952; Moldenke, Résumé 67 & 485. 1959.

Saint John found this plant growing on open páramos, at 3215 meters altitude, and describes it as having white flowers in September.

Additional citations: COLOMBIA: Boyacá: H. St. John 20805 [Herb. U. S. Nat. Arb. 227102] (Ca-44044, N, W-2163889).

PAEPALANTHUS APACARENSIS Moldenke

Bibliography: Moldenke in Maguire & Wurdack, Mem. N. Y. Bot. Gard. 9: 408. 1957; Moldenke, Résumé 71 & 485. 1959; G. Taylor, Ind. Kew. Suppl. 13: 98. 1966.

Citations: VENEZUELA: Bolívar: J. A. Steyermark 75864 (Z-type).

PAEPALANTHUS APPLANATUS Ruhl.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 3, 5, 7, 26, 168--170, & 289, fig. 2 D. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Alv. Silv., Fl. Mont. 1: 156. 1928; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 41 & 43, fig. 16 D. 1930; Moldenke, Known Geogr. Distrib. Erioc. 10 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Résumé 95 &

485. 1959; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 160 & 190. 1969.

Illustrations: Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 7, fig. 2 D. 1903; Ruhl. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 2, 15a: 43, fig. 16 D. 1930.

Ruhland (1903) cites only the type, Glaziou 19973, collected on campos in the Serra do Cipó, Minas Gerais, Brazil, flowering in February, and deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his type photograph number 10570. Ruhland notes "Ab affinibus habitu robustissimo et pedunculis crassis, in sicco compressis et capitulis duris, fere verticaliter elongatis facillime diagnoscenda. Speciebus quibusdam Actinocephali haud dissimilis." Thus far, the species is known only from the type collection.

Citations: BRAZIL: Minas Gerais: Glaziou 19973 [Macbride photos 10570] (B—type, N—photo of type, N—photo of type, W—photo of type, Z—isotype).

PAEPALANTHUS ARBORESCENS Alv. Silv.

Synonymy: Paepalanthus arborecens Alv. Silv., *Fl. Mont.* 1: pl. 135, sphalm. 1928.

Bibliography: Alv. Silv., *Fl. Mont.* 1: 205—206 & 401, pl. 135. 1928; A. W. Hill, *Ind. Kew. Suppl.* 9: 199. 1938; Worsdell, *Ind. Lond. Suppl.* 2: 183. 1941; Moldenke, *Known Geogr. Distrib. Erioc.* 10 & 44. 1946; Moldenke, *Phytologia* 2: 379. 1947; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 81 & 208. 1949; Moldenke, *Résumé* 95, 323, & 485. 1959.

Illustrations: Alv. Silv., *Fl. Mont.* 1: pl. 135. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 773) in sandy campos "secus rupes gres vocatas", near Milho Verde, in the Serra Geral, Minas Gerais, Brazil, in June of 1925, and is deposited in the Silveira herbarium. The original description (1928) states that the stems are "2,5 mm altus", but this is obviously a misprint for 2.5 meters. Ruhland (1903) comments that the "Species propter magnitudinem caulis ramorumque valde notabilis et inter omnes Eriocaulaceas maxima".

PAEPALANTHUS ARCHERI Moldenke

Synonymy: Paepalanthus archerii Moldenke ex Rennó, *Levant. Herb. Inst. Agron.* 69. 1960.

Bibliography: Moldenke, *Bull. Torr. Bot. Club* 68: 67. 1941; Moldenke, *Known Geogr. Distrib. Erioc.* 10 & 45. 1946; Moldenke, *Alph. List Cit.* 1: 12 (1946) and 4: 1072. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 81 & 208. 1949; Moldenke, *Phytologia* 4: 134—135. 1952; E. J. Salisb., *Ind. Kew. Suppl.* 11: 175. 1953; Anon., U. S. Dept. Agr. Bot. Subj. Index 5: 4227. 1958; Moldenke, *Résumé* 95 & 485. 1959; Rennó, *Levant. Herb. Inst. Agron.* 69. 1960; Moldenke, *Résumé Suppl.* 3: 34. 1962.

The type of this species was collected by William Andrew Archer (no. 3677) — in whose honor it was named — at 1800 meters altitude in the Serra do Cipó, Minas Gerais, Brazil, on August 5, 1936,

and is deposited in the United States National Herbarium at Washington.

Additional citations: BRAZIL: Minas Gerais: Mendes Magalhães 2541 [Herb. Jard. Bot. Belo Horiz. 43821] (N).

PAEPALANTHUS ARENICOLA Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 144—145 & 401, pl. 90. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 90. 1928.

This species is based on A. Silveira 552, collected in sandy places on the campos near Bandeirinhas, in the Serra do Cipó, Minas Gerais, Brazil, in April of 1909 and is deposited in the Silveira herbarium. Silveira (1928) says of it "Species primo aspectu illa precedente [P. gibbosus Alv. Silv.] simillima, sed forma capitulorum, pilis rufis receptaculi, colore et indumento bractearum perigoniorumque certe facileque distincta". Recent collectors refer to it as an herb 75 cm. tall, with gray inflorescence-heads, growing on rocky slopes at 1000 meters altitude, flowering and fruiting in March.

Citations: BRAZIL: Minas Gerais: Irwin, Reis dos Santos, Souza, & Fonseca 24936 (Ac); Maguire, Mendes Magalhães, & Maguire 49276 (N, Z).

PAEPALANTHUS ARETIOIDES Ruhl.

Synonymy: Leiothrix aretioides Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 41, nom. nud. 1930.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 163, 164, & 289. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Beauverd, Bull. Herb. Boiss., sér. 2, 8: 292. 1908; Alv. Silv., Fl. Mont. 1: 401. 1928; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 41. 1930; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Résumé 95 & 485. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960; Moldenke, Phytologia 20: 88. 1970.

This species was based by Ruhland (1903) on Schwacke 8488 & 8501 and Glaziou 20003 & 20004, collected at Diamantina, Biribiry, and Formação, Minas Gerais, Brazil -- the Schwacke specimens in April of 1892 -- all deposited in the herbarium of the Botanisches Museum at Berlin, where Macbride photographed Glaziou 20004 as his type photograph number 22278. Ruhland (1903) notes that the "Species habitu Leiothrici lamuginosae subsimilis, sed florum structura etc. valde diversa". Silveira (1928) cites A. Silveira 534 from Quartel, near Diamantina, collected in 1905.

Citations: BRAZIL: Minas Gerais: Glaziou 20003 (B—cotype, Br—cotype, N—cotype), 20004 [Macbride photos 22278] (B—cotype, N—photo of cotype, W—photo of cotype); Mello Barreto 9520 [Herb. Jard. Bot. Belo Horiz. 24527] (N); Schwacke 8488 (B—cotype, B—

cotype), 8501 (B—cotype).

PAEPALANTHUS ARGENTEUS (Bong.) Körn.

Synonymy: Eriocaulon argenteum Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 1: 631, [pl. 52]. 1831 [not E. argenteum Heyne, 1959, nor Mart., 1832]. Dupatya argentea (Bong.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Paepalanthus argenteus Körn. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 401. 1894. Dupatya argentea Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902. Paepalanthus argentens (Bong.) Körn. ex Rennó, Levant. Herb. Inst. Agron. 69, sphalm. 1960.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 1: 631, [pl. 52]. 1831; Bong., Ess. Monog. Erioc. 31. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 558, 575, 577, & 612. 1841; D. Dietr., Syn. Pl. 5: 267. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 282 & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 343 & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 877 (1893) and 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 6, 213, 215, 284, & 289. 1903; Prain, Ind. Kew. Suppl. 3: 34. 1908; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 40, 44, & 53. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 877 (1946) and 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 10, 28, 32, & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Phytologia 4: 135. 1952; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 95, 279, 285, & 485. 1959; G. Taylor, Ind. Kew. Suppl. 12: 11. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 877 (1960) and 2: 401. 1960; Moldenke, Phytologia 17: 458 (1968) and 18: 429 & 433. 1969; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 148 & 190. 1969.

Bongard's original description (1831) of this species is merely "acaule; foliis erectis e basi lata lanceolato-acuminatis, acutis pedunculisque sericeo-argenteis; vaginis oblique fissis obtusis. Tab. LII. Habitat et floret cum praecedente, cui affine." The preceding species, to which he refers here, is what is now known as P. serralapensis Moldenke. The type, not designated by Bongard, is probably the Riedel s.n. cited by Ruhland (1903) "an trockenen, kiesigen Stellen der Serra da Lapa", Minas Gerais, Brazil, deposited in the Leningrad herbarium. Ruhland cites also Glaziou 19969 and Schwacke 8500, both also from the state of Minas Gerais.

According to Kunth (1841), the plate "52" of Bongard's work was never actually published, and this is borne out by the fact that it is not listed by Stapf (1930). Probably it exists only in the Leningrad library or herbarium. Kunth also tells us that Eriocaulon argenteum is closely related to E. gracile Mart., but he is doubtless here referring to E. argenteum Mart., which is

now regarded as a synonym of E. quinquefolium L., of which E. argenteum Heyne is also a synonym.

Ruhland (1903) notes "Jam indumento pulcherrimo argenteo a praecedente [P. lanato-albus Mart.] differt." Macbride photographed Glaziou 1996h in the herbarium of the Botanisches Museum at Berlin as his type photograph number 10571, but this collection, as so many others which he photographed, is not actually a type number of any sort.

Recent collectors have found Paepalanthus argenteus growing on campos, in dry rocky ground, and on white gravel in stony cerrado in an area of sandy cerrado and thickets with sandy pockets in outcrops, at altitudes of 1265 to 1500 meters, flowering and fruiting in April and from November to January. They describe it as up to 60 cm. tall, with dry inflorescence-heads.

Additional citations: BRAZIL: Minas Gerais: Black & Magalhães 51-11782 (Z); Brade 13600 [Herb. Jard. Bot. Rio Jan. 25394] (B); M. A. Chase 10423 (W—1495696); Glaziou 1996h [Macbride photos 10571] (B, Br, N, N—photo, N—photo, W—photo, Z); Irwin, Reis dos Santos, Souza, & Fonseca 22781 (Z); Maguire, Maguire, & Murça Pires 44744 (N); Maguire, Mendes Magalhães, & Maguire 49185 (N); Mendes Magalhães 1900 (Be—13878); Sampaio 6845 (S); Schwacke 8500 (B).

PAEPALANTHUS ARGILLICOLA Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 108—110 & 401, pl. 67. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 67. 1928.

This species was apparently based on two collections: "In pratis humidis argillosisque in serra da Moeda, Minas, Maio 1910 et in campis humidis ferruginosisque in serra do Mascate, prope Congonhas do Campo, Minas Geraes, Dec. 1912, legit Alvaro da Silveira; n. 571 in herbario Silveira". Williams & Assis found the species growing in meadows and wet meadows, at altitudes of 1400 to 1600 meters, flowering in February and April, but distributed their material as P. bryoides (Bong.) Kunth. Williams & Assis 6636 is a mixture with a species of Eleocharis.

Citations: BRAZIL: Minas Gerais: Williams & Assis 5798 (W—1932611), 6556 (N, N, S), 6636, in part (Ca—744423).

PAEPALANTHUS ARGYROLINON Körn.

Synonymy: Paepalanthus argyrolinum Körn. ex Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 22. 1888. Dupatya argyrolinon (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya argyrolinon Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 278, 299, 374,

& 507. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1023. 1883; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 22. 1888; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 11, 173, 177-179, & 289, fig. 20. 1903; Stapf, Ind. Lond. 4: 518. 1930; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 40, 41, 44, & 51. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Phytologia 4: 135. 1952; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 95 & 485. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 401. 1960; Moldenke, Résumé Suppl. 18: 13. 1969; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: [146], 158, 174, & 190. 1969.

Illustrations: Ruhl. in Engl., Pflanzenreich 13 (4-30): 177, fig. 20. 1903.

This species is based on G. Gardner 5260, collected somewhere in Minas Gerais, Brazil, deposited in the herbarium of the Botanisches Museum at Berlin. Macbride photographed an isotype in the herbarium of the Naturhistorisches Museum at Vienna as his type photograph number 29989. Ruhland (1903) cites only the type collection. The specific epithet is sometimes uppercased.

Additional citations: BRAZIL: Minas Gerais: G. Gardner 5260 [Macbride photos 29989] (B—type, N—photo of isotype, S—isotype, W—photo of isotype). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

PAEPALANTHUS ARGYROPOUS Alv. Silv.

Bibliography: Alv. Silv., Fl. Serr. Min. 36. 1908; Alv. Silv., Fl. Mont. 1: [21]—22 & 401. 1928; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Mendes Magalhães, Anais V Reun. Anual Soc. Bot. Bras. 242—243. 1956; Moldenke, Résumé 95 & 485. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 7. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 354) "In campis paludosis prope Serrinha da Lapinha, in serra do Cipó", Minas Gerais, Brazil, in April of 1905 and is deposited in the Silveira herbarium. Irwin and his associates describe the plant as a caespitose rosette herb, the inflorescence 50—85 cm. tall, the leaves fleshy, and the flower-heads white, growing in meadows in areas of grassy meadows and adjacent sandy campos and in wet campos bordering meadows and slow creeks with adjacent outcrops, at 1300 meters altitude. It has also been found in marshy fields, flowering and fruiting in January, April, and October. Irwin, Reis dos Santos, Souza, & Fonseca 22020 was originally mixed with P. comans Alv. Silv., evidently indicating that the two species were growing together. Silveira (1928) says

"Species pedunculis argenteis distinctissima".

Citations: BRAZIL: Minas Gerais: Archer & Mello Barreto 4926 [Herb. Jard. Bot. Belo Horiz. 17522; Herb. U. S. Nat. Arb. 177445] (N, N, W—2121739); Black & Mendes Magalhães 51-11917 (Be—69741); Heringer & Castellanos 6088 (Z); Irwin, Reis dos Santos, Souza, & Fonseca 22020 (Ac, Rf), 22549 (Rf); A. Lutz 1582, in part (Ja); Mello Barreto 2537 [Herb. Jard. Bot. Belo Horiz. 8238] (N); Mendes Magalhães 42624 (N); Murça Pires & Black 3346 (Be—63790); A. Silveira 354 (B—isotype).

PAEPALANTHUS ARGYROPUS var. BREVIFOLIUS Alv. Silv.

Synonymy: Paepalanthus argyropus var. brevifolia Alv. Silv., Fl. Mont. 1: 22 & 401. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 22 & 401. 1928; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95, 323, & 485. 1959.

This variety is based on two collections from "In campis in Serra do Cabral, Minas: Alv. Silveira, Jun. 1910, et in campis prope Milho Verde, in Serra Geral, Minas.: Alv. Silveira, Jun. 1925; no. 591 in herbario Silveira". Silveira (1928) describes the plant as "Folia nunc glabra nunc supra patenti pubescentia demum glabra, 4 cm longam 2 mm medio lata". It is known thus far only from the original collections.

PAEPALANTHUS ARGYROPUS var. PUBESCENS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 22 & 401. 1928; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

The type of this variety was collected by Álvaro Adolpho da Silveira (no. 357) in fields in the Serra do Cipó, Minas Gerais, Brazil, in April of 1905 and is deposited in the Silveira herbarium. Silveira (1928) describes the plant as "Folia utrinque pubescentia, 3—4 mm medio lata". It seems to be very closely related to P. barbiger Alv. Silv.

Additional citations: BRAZIL: Minas Gerais: A. P. Duarte 6530 [Herb. Brad. 22967] (Lw); Mendes Magalhães 18937 [Herb. Brad. 25706] (N, Z).

PAEPALANTHUS ARISTATUS Moldenke

Bibliography: Moldenke, Phytologia 7: 122—123. 1960; Moldenke, Biol. Abstr. 35: 2177. 1960; Moldenke, Résumé Suppl. 2: 4, 10, & 15. 1960; Hocking, Excerpt. Bot. A.4: 593. 1962; G. Taylor, Ind. Kew. Suppl. 13: 98. 1966.

Citations: VENEZUELA: Amazonas: Wurdack & Adderley 42861 (N—type, S—isotype).

PAEPALANTHUS ARMERIA Mart.

Synonymy: Dupatya armeria (Mart.) Kuntze, Rev. Gen. Pl. 2: 745.

1891. Dupatya armeria Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902. Paepalanthus armeria Körn., in herb.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 299, 377--378, & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 168, 171, [283], & 289. 1903; Alv. Silv., Fl. Mont. 1: 401. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10, 28, & 45. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 209. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 95, 279, & 485. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 401. 1960; Rennó, Levant. Herb. Inst. Agron. 69. 1960; Moldenke, Résumé Suppl. 11: 4. 1964.

The type of this species was collected by Johann Emanuel Pohl at Chapada de São Marcos, Goiás, Brazil, and is probably deposited in the herbarium of the Botanische Staatssammlung at Munich, this specimen having been photographed by Macbride as his type photograph number 18693. Ruhland (1903) cites this type collection and also Glaziou 22303 & 22308, all from Goiás. He comments that "Habitu, praesertim bracteis involucriantibus flores haud paullo superantibus insignis. Rami fertiles brevissimi. Specimina a cl. Glaziou collecta a descriptione Koernickeana stylis quam germen perspicue longioribus abhorrent". Körnicke (1863) noted "Habitu P. helichrysoidi Kth. affinis sed florum valde diversus". Silveira (1928) cites A. Silveira 435 from the Serra da Caraça in Minas Gerais, collected in 1906.

The specific epithet in this binomial is often uppercased. The species has been found in anthesis in March and July. The labels accompanying the Macbride photograph, mentioned above, indicate Martius as the collector of the type, but this is apparently erroneous, as a reading of the original description clearly shows. Glaziou 22303 appears to be a mixture with P. albo-villosus Alv. Silv.

Citations: BRAZIL: Federal District Brasilia: Heringer 8486/680 (Z); Irwin & Soderstrom 5825 (N). Goiás: Glaziou 22303, in part (Br, N), 22308, in part (S); Heringer 8486 [Herb. Brad. 23118] (Lw); J. E. Pohl s.n. [Chapada de S. Marcos; Macbride photos 18693] (Br--isotype, N--isotype, N--photo of type, W--photo of type). Minas Gerais: Mendes Magalhães s.n. [Herb. Jard. Bot. Belo Horiz. 42624] (N).

PAEPALANTHUS ASCENDENS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 237--238 & 401, pl. 158. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 158. 1928.

The type of this species was collected in sandy fields between Serro and Diamantina, in the Serra Geral, Minas Gerais, Brazil, by Álvaro Adolpho da Silveira (no. 799) in June of 1925 and is deposited in the Silveira herbarium. On page 401 of his work (1928) Silveira cites an A. Silveira 770 from the Serra Geral, collected in 1926 — whether this is meant to be the recording of another collection or is an intentional correction of the data given on page 238 of the same work, or is just an error, is not clear. Silveira comments that the "*Species ob caulem ascendentem ad affinitibus distincta*". No other collections of the taxon are known to date.

PAEPALANTHUS ASPER Alv. Silv.

Bibliography: Alv. Silv., Fl. Serr. Min. 64. 1908; Alv. Silv., Fl. Mont. 1: 265--266 & 401, pl. 176. 1928; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Alph. List Cit. 2: 412 (1948) and 3: 935. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Phytologia 4: 135. 1952; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 176. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 350) in dry sandy fields in the Serra do Cipó, Minas Gerais, Brazil, in April of 1905 and is deposited in the Silveira herbarium. Silveira (1908) notes that the "*Species cum P. latifolio* (Bong.) Koern. valde affinis, sed foliis non lanceolatis, ciliatis atque basi dilatatis facile distinguenda" — the species here referred to is now known as *P. serralapensis* Moldenke.

Additional citations: BRAZIL: Minas Gerais: A. Silveira 350 [Herb. Marie-Victorin 15834] (N—photo of isotype, Z—photo of isotype).

PAEPALANTHUS ATER Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 247--249 & 402, pl. 165. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Alph. List Cit. 2: 412 (1948) and 3: 935. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Phytologia 4: 135. 1952; Moldenke, Résumé 95 & 485. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 165. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 932) in fields near Morro do Breu, in the Serra do Cipó, Minas Gerais, Brazil, in April or 1905 and is deposited in the Silveira herbarium; however, on page 402 of his work (1928) Silveira cites A. Silveira 329 from the Serra do Cipó, collected in the same year. Whether this entry is intended as the recording of a second collection or if it represents a correction of the type number given on page 249 of the same work, or if it is a typographic error, is not clear. He also comments that the "Spe-

cies ob bracteas involucentes atras, petala florum femineorum et alias characteres P. superbo Ruhl. differt; ab aliis affinibus magnitudine capitulorum, indumento foliorum etc. etiam valde distincta." To me the species seems to be very closely related to P. comans Alv. Silv.

The Mendes Magalhães 2558 & 2559 [Herb. Jard. Bot. Belo Horiz. 43861 & 43862], distributed as P. ater, are actually P. complanatus Alv. Silv.

Additional citations: BRAZIL: Minas Gerais: Duarte & Graziela Barroso 7917 [Herb. Brad. 27768] (N, Z); Macedo 2952 (N, S); A. Silveira 329 [Herb. Marie-Victorin 15843] (N--photo of isotype, Z--photo of isotype).

PAEPALANTHUS ATROVAGINATUS Ruhl.

Synonymy: Paepalanthus gracilipes Alv. Silv., Fl. Serr. Min. 45, pl. 11. 1908. Paepalanthus atro-vaginatus Ruhl. ex Alv. Silv., Fl. Mont. 1: 91. 1928.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 152, 156--157, & 289. 1903; Alv. Silv., Fl. Serr. Min. 45, pl. 11. 1908; Prain, Ind. Kew. Suppl. 3: 126. 1908; Alv. Silv., Fl. Mont. 1: 91, 102--103, & 407, pl. 2. 1928; Stapf, Ind. Lond. 4: 518. 1930; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10, 12, 45, & 49. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84, 208, & 209. 1949; Moldenke, Résumé 95, 98, 420, 485, & 487. 1959; Moldenke, Résumé Suppl. 1: 6, 20, & 25. 1959.

Illustrations: Alv. Silv., Fl. Serr. Min. pl. 11. 1908; Alv. Silv., Fl. Mont. 1: pl. 2. 1928.

The type and only collection of P. atrovaginatus cited by Ruhland (1903) is Schwacke 14329, collected in sandy soil among boulders on the summit of the Serra São Frasco, at 1100 meters altitude, Minas Gerais, Brazil, flowering in March, and deposited in the herbarium of the Botanisches Museum at Berlin. The type of P. gracilipes was collected by Dr. Alfredo Baeta Neves among rocks near Ouro Preto, Minas Gerais, in March of 1907 and is number 482 in the Silveira herbarium. Of the latter Silveira (1928) says "Species P. scirpeo proxima, sed foliis majoribus, vagina barbata, pedunculis longe pilosis et summitate eorum non corrugata differt. A Paepalanthis sectionis 'Variabiles' Ruhlandii capitulis interdum proliferis et aliis characteribus facile distinguitur".

Citations: BRAZIL: Minas Gerais: Baeta Neves s.n. [Herb. Silveira 482] (B); Schwacke 14329 (B--type, Z--isotype), s.n. [Herb. Mus. Nac. Rio Jan. 29466] (N, S), s.n. [Itabiro, 28-12-1888] (N).

PAEPALANTHUS AUREUS Alv. Silv.

Synonymy: Paepalanthus anreus Alv. Silv., Fl. Mont. 1: pl. 181, sphalm. 1928. Paepalanthus aurens Alv. Silv. ex Rennó, Levant. Herb. Inst. Agron. 69, sphalm. 1960.

Bibliography: Alv. Silv., Fl. Serr. Min. 66, pl. 25. 1908; Alv. Silv., Fl. Mont. 1: 271--273 & 402, pl. 180 & 181. 1928; Stapf, Ind. Lond. 4: 518. 1930; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Phytologia 2: 379. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82. 1949; Moldenke, Résumé 95, 323, & 485. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960; Moldenke, Résumé Suppl. 3: 34. 1962.

Illustrations: Alv. Silv., Fl. Serr. Min., pl. 25. 1908; Alv. Silv., Fl. Mont. 1: pl. 180 & 181. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 359) in dry fields at Capão dos Palmitos, in the Serra do Cipó, Minas Gerais, Brazil, in April of 1905 and is deposited in the Silveira herbarium. Silveira (1908) says of it: "Species propter bractearum involucrentium colorem et formam ad affinis valde distincta". Collectors have found the plant in flower in January and April.

Citations: BRAZIL: Minas Gerais: Archer & Mello Barreto 4409 [Herb. U. S. Nat. Arb. 177565] (W--2121732); Mello Barreto 2571 [Herb. Jard. Bot. Belo Horiz. 8225] (N); Murça Pires & Black 2959 (Be--63513); A. Silveira 359 (B--isotype), s.n. [Herb. Magalhães Gomes 4089; Herb. Jard. Bot. Belo Horiz. 26631] (N); L. B. Smith 7072 (N, W--2120222, Z), 7090 (Z).

PAEPALANTHUS AUYANTEPUIENSIS Moldenke

Bibliography: Moldenke, Act. Biol. Venez. 2: 47--48. 1957; Anon., Biol. Abstr. 32: 2917. 1958; Moldenke, Résumé 71 & 485. 1959; G. Taylor, Ind. Kew. Suppl. 13: 98. 1966.

This plant has been collected at 2300 meters altitude, flowering in April. J. A. Steyermark 93957 was originally a mixture with a many-headed species, *P. scopulorum* var. *ayuantepuiensis* Moldenke, which Steyermark says came from the same population. The latter has been re-assigned the number 93957a.

Citations: VENEZUELA: Bolívar: J. A. Steyermark 93957 (Lw, N, S), 93981 (N, Z), 94052 (Lw, N); Vareschi & Foldats 4892 (N), 4895 (Ve--type, Z--isotype).

PAEPALANTHUS BABYLONIENSIS Alv. Silv.

Synonymy: *Paepalanthus babylonensis* Alv. Silv. ex Worsdell, Ind. Lond. Suppl. 2: 183. 1941.

Bibliography: Alv. Silv., Fl. Mont. 1: 188--189 & 402, pl. 121. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 121. 1928.

This species is apparently based on A. Silveira 428, collected in sandy fields near Passos, in the Serra da Babylonia, Minas Gerais, Brazil, in April of 1925, and deposited in the Silveira herbarium. Silveira, on page 402 of his work (1928), cites an A. Sil-

veira 741 from the same locality and collected in the same year. It is not clear if this is intended as the citation of a second collection, as a correction of the collection number given on page 189 of the same work, or is a typographic error.

PAEPALANTHUS BAHIENSIS (Bong.) Kunth

Synonymy: Eriocaulon bahiense Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 1: 622. 1831. Paepalanthus bahiensis Kunth ex G. Gardn. in Hook., Icon. Pl. 6 [ser. 2, 2]: pl. 527. 1843. Dupatya bahiensis (Bong.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya bahiensis Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902. Eriocaulon bahiensis Bong. apud Ruhl. in Engl., Pflanzenreich 13 (4-30): 191, sphalm. 1903.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 1: 622. 1831; Bong., Ess. Monog. Erioc. 22—23. 1831; Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 3: 545, pl. 20. 1835; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 517, 572, 612, & 624. 1841; G. Gardn. in Hook., Icon. Pl. 6 [ser. 2, 2]: pl. 527. 1843; D. Dietr., Syn. Pl. 5: 261. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 274 & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 322—323 & 506. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 877 (1893) and 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 189, 191, [283], 284, & 289. 1903; Alv. Silv., Fl. Mont. 1: 220. 1928; Stapf, Ind. Lond. 3: 90. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10, 28, 32, & 45. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 877 (1946) and 2: 401. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 95, 279, 286, & 485. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 877 (1960) and 2: 401. 1960; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: [146], 175, 184, 186, & 191. 1969.

Illustrations: Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 3: pl. 20. 1835.

The original description of this taxon by Bongard (1831) reads as follows: "caulibus caespitosis simplicibus; foliis radicalibus lanceolato-acuminatis obtusiusculis pilosis ciliatis; pedunculis persistentibus pilosis; vaginis bifidis glabriusculis. Tab. XX. Habitat prope Rios dos Contos, provinciae Bahiensis. Floret Februario. ¶ Differt a praecedente [P. ciliatus (Bong.) Kunth] praeter notas allatas: 1) habitu diverso; 2) foliis angustioribus pilosis, minus dense ciliatis; 3) pedunculis longioribus, crassioribus, pilosis, non pediculis; 4) capitulis triplo majoribus". Ruhland (1903) cites only this type collection, for which he notes "an sandigen, etwas feuchten Stellen bei Camamá und Rio de Contas (Riedel)" — the actual type doubtless deposited in the Leningrad herbarium. The M. A. Chase 8011, distributed as P. bahiensis, is actually P. coutoensis Moldenke.

PAEPALANTHUS BALANSAE Ruhl.

Synonymy: Paepalanthus scholiophyllus var. balansae Ruhl. ex Moldenke, Résumé Suppl. 3: 34, in syn. 1962.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 128, 151--152, & 289. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Moldenke, Known Geogr. Distrib. Erioc. 20 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 99 & 208. 1949; Moldenke, Phytologia 4: 135. 1952; Moldenke, Résumé 117 & 485. 1959; Moldenke, Résumé Suppl. 3: 13 & 34. 1962; Hocking, Excerpt. Bot. A.6: 455. 1963; Angely, Fl. Anal. Paran., ed. 1, 200. 1965; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 184, 186, 187, & 191. 1969.

The type of this species was collected by, and named in honor of, Benedict Balansa (no. 568) "auf etwas trockenen Triften" at Pastoreo-mi, in the eastern part of the Cordillera Villarica, Paraguay, and is deposited in the herbarium of the Botanisches Museum at Berlin. Macbride photographed an isotype in the Desléssert Herbarium at the Conservatoire et Jardin Botaniques in Geneva as his type photograph number 25164. Ruhland (1903) cites only the type collection and notes that the "Species bracteis involucrentibus insignis". Paepalanthus scholiophyllus var. balansae is apparently based on Hassler 9499, also from Paraguay, deposited in the Stockholm herbarium.

The species has been collected in anthesis in September and October. Balansa describes the flowers as whitish, while Hassler describes the plant as an herb 0.2--0.3 m. tall, with woody stems, and white petals, growing in sandy places. Material has been misidentified and distributed in herbaria as P. scholiophyllus Ruhl.

Citations: PARAGUAY: Balansa 568 [Macbride photos 25164] (B--type, Br--isotype, Er--isotype, N--isotype, N--photo of isotype, P--isotype, S--isotype, W--photo of isotype); Hassler 4448 (Ca--944900, N, S), 9499 (Ca--930338, Mi, N, S, V--7010, W--2055382).

PAEPALANTHUS BALANSAE var. **DENSIFLORUS** Moldenke

Bibliography: Moldenke, Phytologia 8: 162. 1962; Moldenke, Résumé Suppl. 3: 13. 1962; Hocking, Excerpt. Bot. A.6: 455. 1963; Angely, Fl. Anal. Paran., ed. 1, 200. 1965; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 191. 1969.

Citations: BRAZIL: Paraná: Braga & Lange 92 (N--isotype, Z--type).

PAEPALANTHUS BARAUNENSIS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 112--113 & 402, pl. 70. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 70. 1928.

This species is based on A. Silveira 642, collected in fields in the Serra de Diamantina, Minas Gerais, Brazil, in April of

1916 and deposited in the Silveira herbarium. Silveira (1928) cites plate "LXVIII" for this species in his text, but the plate is actually labelled "LXX" (plate 68 depicts P. capanemae Alv. Silv., as it should according to page 111 of the text). He comments that the "Species ab affinibus facile distinguenda".

PAEPALANTHUS BARBIGER Alv. Silv.

Synonymy: Paepalanthus barbigerus Alv. Silv. ex Moldenke, Résumé 323, in syn. 1959.

Bibliography: Alv. Silv., Fl. Serr. Min. 47, pl. 16. 1908; Alv. Silv., Fl. Mont. 1: 152—154 & 402, pl. 96. 1928; Stapf, Ind. Lond. 4: 518. 1930; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95, 323, & 485. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960; Moldenke, Phytologia 20: 97 & 359. 1970.

Illustrations: Alv. Silv., Fl. Serr. Min. pl. 16. 1908; Alv. Silv., Fl. Mont. 1: pl. 96. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 352) in dry sandy fields near Morro de Breu, in the Serra do Cipó, Minas Gerais, Brazil, in April of 1905 and is deposited in the Silveira herbarium. Silveira (1928) says of it: "Species ab affinibus, P. trichopefalo Alv. Silv. excepto, florum femineorum sepalis hirsutis differt; ab illo ipsorum sepalorum forma et ramis haud brevissimis differt".

The species has been found by collectors at 1200 meters altitude, and, in my opinion, is very closely related to P. argyropus var. pubescens Alv. Silv. The Segadas-Vianna 6008 and Segadas-Vianna & Lorêdo Serra II.1097, distributed as P. barbiger, are actually P. complanatus Alv. Silv.

Citations: BRAZIL: Minas Gerais: Macedo 2972 (N, S, S); Mello Barreto 2545 [Herb. Jard. Bot. Belo Horiz. 6245] (N); Mendes Magalhães 18967 [Herb. Brad. 25714] (N, Z); Murça Pires & Black 2970 (Z); Segadas-Vianna & Lorêdo Serra 1090 (Ja); A. Silveira 352 (B—isotype, Z—isotype).

PAEPALANTHUS BARBULATUS Herzog

Bibliography: Lützelburg, Estud. Bot. Nordeste 3: 148. 1923; Herzog in Fedde, Repert. Sp. Nov. 20: 83—84. 1924; A. W. Hill, Ind. Kew. Suppl. 7: 174. 1929; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Phytologia 4: 135. 1952; Moldenke, Résumé 95 & 485. 1959.

This species is apparently based on two collections made by Freiherr Philipp von Lützelburg — no. 212 and s.n. — since the original description by Herzog (1924) has this comment "Staat Bahia: Serra das Almas, 1800 m. Fels. no. 212 (1914) und Itubira, Sandstein, 1700 m." He continues "Aus der Verwandtschaft von P. leucoblepharus Koern., von dem sich die neue Art durch die

rosettig ausgebreiteten bis zurückgeschlagenen, an der Spitze dicht weiss gebarteten Blätter, die spitzen, auf dem Rücken behaarten Hüllbrakteen, die schmäleren und nur an der Spitze mit kugelig endenden Keulenhaaren besetzten Sepalen und die viel mächtiger entwickelten Petalen der ♂ Blüte unterscheidet. Die Sepalen der ♂ Blüte von P. leucoblepharus sind durch ihre auch am Rücken und gegen der Spitze hin lange und dichte Behaarung fast quastig, die Kronröhre kürzer und mit schwach entwickelten Randabschnitten, die Antheren dunkel gefarbt und exsert".

Smith collected this plant in anthesis in April. Macbride photographed Lützelburg 212 in the herbarium of the Botanische Staatssammlung at Munich as his type photograph number 18694.

It should be noted here that P. barbatus Alv. Silv. is a synonym of P. coutoënsis Moldenke.

Citations: BRAZIL: Bahia: Lützelburg 212 [Macbride photos 18694] (N—photo of cotype, W—photo of cotype). Minas Gerais: L. B. Smith 6836a (Z).

PAEPALANTHUS BARKLEYI Moldenke

Bibliography: Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 60 & 208. 1949; Moldenke, Phytologia 3: 114—115 & 142 (1949) and 4: 135. 1952; E. J. Salisb., Ind. Kew. Suppl. 11: 175. 1953; Moldenke, Résumé 67 & 485. 1959; Moldenke, Résumé Suppl. 18: 4. 1969.

Smith describes this plant as growing in a small colony in dense shade of grasses on wet slopes in springy muck, sandstone soil, and soft chaparral formation. Collectors have found it at altitudes of 1300 to 2700 meters, flowering and fruiting in June, September, and December.

Additional citations: COLOMBIA: Boyacá: Uribe Uribe 3919 (W—2486184). Cundinamarca: S. G. Smith 1018 (Ca—1341403, W—2047393).

PAEPALANTHUS BARREIRENSIS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 260—261 & 402, pl. 172 [bis]. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 172 [bis]. 1928.

This species was typified by Silveira (1928) as follows: "In campis arenosis inter Diamantine et Barreiras, Minas Geraes: dr. J. Michaeli, Nov. 1923; n. 731 in herbario Silveira", but on page 402 of the same work he seems to cite a J. Michaeli 721, also from near Barreiras, collected in 1923. It is not clear if this represents a typographic error, a correction of the previous citation, or the citation of a second collection. He comments "Ab affine P. homomallo Mart. et ab illa precedente [P. gonçalensis Alv. Silv.] foliis haud crassis, utrinque dense pubescentibus et longioribus praecipue differt".

It should also be noted here that Silveira (1928) in his text cites plate "CLXXII" as illustrating this species [P. barreirensis], and, indeed, it seems as though this is the number that should have appeared beneath the plate. However, the plate is actually the second plate so numbered, the first one so numbered illustrating P. gonçalensis Alv. Silv. (which in his text he cites as plate "CLXXI"), There seems to be no plate 173 at all.

PAEPALANTHUS BATATALENSIS Alv. Silv.

Synonymy: Paepalanthus batatalensis Alv. Silv., Fl. Mont. 1: 77, sphalm. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 77—79 & 402, pl. 45. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 45. 1928.

This species was based on three collections, described by Silveira (1928) as follows: "In campis prope Capanema in Serra do Batatal, Minas; Apr. 1906; in Serra do Cipó, Apr. 1905 et in Serra do Riacho de Vento, Apr. 1918: Alvaro da Silveira; n. 340 in herbario Silveira". On page 402 of the same work he cites A. Silveira 340 from Serra do Batatal, collected in 1908.

PAEPALANTHUS BATOCEPHALUS Ruhl.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 201, 211, 212, & 289. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Alv. Silv., Fl. Mont. 1: 402. 1928; Moldenke, Known Geogr. Distrib. Erioc. 10 & 45. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

The type of this species was collected by Auguste François Marie Glaziou (no. 7993) at Campos da Bocaina, Vacca Cahio, São Paulo, Brazil, and is deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his type photograph number 10572. The printed label accompanying this collection is inscribed "Rio de Janeiro". Silveira (1928) cites A. Silveira 599 from the Serra de Ibitipoca, Minas Gerais, collected in 1907.

The species has been collected in anthesis in February. Ruhl. (1903) comments that the "Species pulchra, P. puberulo proxima, a quo statim habitu in omnibus partibus graciliore differt. Insignia praeterea folia utrinque persistenter molliterque pubescentia et vaginae indumento simili instructae. Margines foliorum in nostra specie numquam tenui-membranaceae evadunt." It also seems to have considerable habitual resemblance to P. itatiaiensis Ruhl.

Citations: BRAZIL: São Paulo: Glaziou 7993 [Macbride photos 10572] (B--type, N--photo of type, N--photo of type, W--photo of type); B. Lutz s.n. [Herb. Mus. Rio Jan. 29524] (N, S).